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Encoding

As crucial as any social development in human history was the emergence of non-analog codes. That development can be sub-divided into a number of phases: perhaps the grossest distinction would be between the representation of number and the representation of other forms of human symbolism (although some of the 'fuzziness' research of Lotfi Zadeh [e.g., Zadeh 1979] and his students, and others [e.g., Gaines – Kohout 1977] – by implication – renders problematic certain traditional hard-edged distinctions between numericality and qualitiveness). Traditionally the distinction between the spoken and the written had been taken for the most important division: but it is at least arguable that now we can see the distinction between number symbolism and non-number symbolism as the most critical, Zadehan accomplishments to the contrary notwithstanding.¹

Underlying all these forms of representation are the consequences for the human species of non-analogality. While the distinction between analog representations and non-analog representations is crucial, nonetheless it does need to be noted that we may construe analogality as having degrees distributed over an analogality/non-analogality (dis)continuum. Even (literally) seeing the physical world – in some crucial senses an analog experience – involves learning, although, on the whole, more so when what is being seen is being seen as a convention. A person blind from birth who through surgical intervention or otherwise suddenly gains sight has to learn, even apart from understanding verbal mediation (e.g., billboards; books), to make sense of (analog) visual experience. And that obtains all the more so for those components of visual experience which though analog nonetheless of necessity must contain some element of conventionality; also, such learning is, *a fortiori*, far greater and more demanding when parts of the visual realm are treated as conventions which are not analog.

One may contend that the history of consciousness, or of symbolism, or even of the human brain, taken collectively, is marked by increasing consciousness or, thus, self-consciousness.² Put another way, it is a matter of building ever more abstract models – as with, to take a paradigmatic case, the logical modelling of mathematics. Phenomenology, ethnomethodology, computation-

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al linguistics, and numerous other modes (e.g., W.A. Sedelow, Jr. 1957) of self-consciousness about symbolism, have bit by bit — that is to say, word by word — rendered more and more of our uses of language problematic. But, to this point, the approach to problematicity has been piecemeal. Now the question is whether it would not be useful to achieve for the first time a culture-scale paradigm shift by rendering problematic all representation — or, at least, all non-analog representation. The ‘usefulness’ in question may be thought of as deriving from a purely intellectual exfoliation of ideas (that is, a ‘next stage’ in the drama of the history of thought); but it also may be understood to derive from the current situation of our species, wherein the (literal) globalization of CCNs (Computer Communication Networks) is leading to a transveridicalization of heretofore culturally-defined notions of ‘truth,’ and other word-length language strings in a sub-lexicon with ‘truth.’³ That is, the arbitrariness of the non-analog ‘character sets’ (e.g., alphabets; syllabaries) vis-à-vis each other, and of their respective rules of usage (i.e., constrained combinatorics), is brought closer to consciousness (i.e., less adequately defended against, psychoanalytically speaking) with the (increasing) constant mutual juxtaposition of such sets of symbolism by way of the development of modern computing/telecommunications and informatics. What holds at the level of the “medium” (McLuhan) holds *a fortiori* at the level of the “message,” and so now we are seeing the beginnings of an uneven but world-wide transveridicalization which goes far beyond its earlier partial parallel in the ‘transvaluation of values.’ *Truths* in particular and *truth* in general are shown to be cultural fictions masquerading as givens of a mythic ‘Nature’ peculiar to each culture. (Problems with intercultural mapping — that is, with *translations* and, more technically, with *commensurability*⁴ — exacerbate our awareness of specific cultural arbitrariness with symbolism, and end by raising issues of how communicative are our socially available symbolisms for communication, if, indeed ‘communication’ is the word.⁵ Are those symbolologies, on balance and globally speaking, more dysfunctionally divisive than they are cohesive in effect? And, thus [in that way among others] not contributing to effective species adaptation to [dynamically changing] environment constraints?)

While there are some few resemblances in the early forms of Chinese ideographs to the objects which they were meant to represent and while we have onomatopoeia — or, more exactly, the imputation of it — as an occasional phenomenon in language, fundamentally in both the oral and written modes, as well as others, and with reference to both number systems and the character sets for non-numeric representations, the elements are not analog in character. With the exception of certain recent highly formal systems of notation these non-analog sets of notational elements and ‘rules’ for their use also have emerged without over-all plan or purpose. The perception that language is a social construct is itself an achievement of recent centuries. It is not, after all,

so many centuries ago when language was thought to be not a construct but a given (even, in some cases, a God-given).

Thus, there should be no possible imputation of contrivance to achieve social control in the emergence of non-analog symbolism, although at various points in time there may very well be those who do perceive the social implications, and especially the control implications, of particular types of notation, and who may wish to hold on to whatever presumptive advantages of restriction of access those types of notation may be believed to have or to be susceptible of being used for. So, then, without any utilization of the vocabulary of intentionality (now hopelessly outmoded, in any case, and in every case, anyway, Speech Act Theory (Searle, *et al.*) to the contrary notwithstanding⁶), we may take note of the essentially hieratic quality produced by all non-analog representations and – given that non-analogality is always a matter of degree on a scale – of some measure of the hieratic even in analog representations, even (in the case at the limit) in simple human optical experiences.

Today the issue of ‘non-analogality’ is the general form of expression for a widespread series of crises of confidence in what is being generated using such notation. These crises of confidence as to how much professional users of symbolism actually ‘know’ (e.g., economists) have become the more acute in view of the high rate of technological/cultural/social change which is exposing the extent to which what has been ostensibly significant knowledge in fact has been at best highly contingent and often merely descriptive, or *ex post facto* (i.e., non-knowledge); as to the character and analysis of scientificity, see Sedelow – Sedelow 1979 and 1978, and, also, W.A. Sedelow, Jr. 1968. The arrival, primarily through television, but, earlier, through motion pictures, of widely accessible and highly potent analog representations of reality is also behind the major challenge to non-analog modes of representation, and (by necessary extension) the challenge to Establishment purveyors of instances of such representation (as through churches, schools and universities, etc.); the dynamics of United States changing popular response to the Vietnam War constitute an interesting subject of study from this perspective.

One of the critically important features of the traditions of non-analog symbolism has been the effort to create (the illusion of) a separation of the perception of what is symbolic from the perception of what is a part of physical reality. It even may be argued that a part of the basic, most basic even, social construction of reality through the use of symbolism has been the tacit, and, more recently, the overt, perception of it (i.e., symbolism) as something other than physical, i.e., the (social) invention of the non-physical, or, alternatively, the devising of ‘immateriality’ by way of synonymies and sub-lexicons of *spirituality*, *ideas*, *symbolism*, and the like. Just as in the largest perspective professional symbol users derived from, historically, those who in the past have fulfilled essentially priestly functions in societies, so too does the concept

of symbolism derive from the emphasis on a 'non-material' which has been a part of the verbal stock-in-trade available for generically priestly tasks.

Further, in a world which technology is making more fully and compactly one, the presence and use of non-analog representations has the effect of separating (*per contra*: many of the recent analog international 'symbols of the road,' for automotive vehicle drivers). Thus, in addition to the fundamental issue posed by non-analog representation and the possible resolution of that issue by a decline in non-analog representation, and in addition to an issue as to the relative significance of non-quantitative – or, more precisely, non-formal and non-algorithmic – uses of symbolism vis-à-vis other uses of symbolism, there is the third and critical development of a greater understanding of 'symbolism' through the use of physical models (e.g., Arbib et al. 1982).⁷ The chapters in this part of the book are notable for their contribution to, and understanding of, symbolism in its physical manifestation, and also for their contribution to the increasing formality of such understanding – a formality which is enhanced by the use of the computer, to which it also contributes or, rather, which it makes possible.

At least since the time of Francis Bacon there has been a clear understanding of how subject to illusions of their own manufacture academic intellectuals can be. Now, the most troublesome of those illusions is that to 'understand' talk we need to generate more talk after 'thinking,' as opposed to conducting classically scientific investigations. Wilbur Marshall Urban, in the Yale Philosophy Department in an earlier day, wrote that language was the last and deepest problem of the philosophic mind (Urban 1939). With that we may well agree, while still perceiving that what Urban said was truer than he knew, and harder to cope with. That is, while Urban understood that issues in philosophy must be dealt with as matters of language, he seems not to have understood that matters of language, in turn, are going to be understood with physical models applied to, *inter alia*, biological phenomena. Helpful though Ogden and Richards' *The meaning of meaning* (1923) was in its day, by now it – for example – serves as a barrier to understanding that the meaning of meaning is not simply reflection and talk, but rather the impacts of particular verbal strings within varying fields of force (both within and outside the central nervous system, but necessarily always perceived wholly within it, and perceived through the mediation of inter-codal contrast).

In addition to the very substantial importance which each chapter in this part of this book has in its own right, there is the further advantage and significance to them that goes with the way in which they are able to exemplify how to move toward formality with all dimensions of all lingual strings – in virtue of helping us to obtain distance from our own language uses and thus ready us for perceiving them through a formalist paradigm. The rigorous analysis of non-semantic – or, more precisely, what heretofore usually has not

been regarded as semantic – dimensions of verbal language, (i.e., pauses), and the effort at finding notation and rules of usage for characterizing a non-verbal language (i.e., music) which, nonetheless, partakes through the musicality of verbal language in a close association with it are highly advantageous, in their own right and also as part of the larger and socially important enterprise of *understanding* language (only) for the differential physical impacts (intra-cranial and extra-cranial) of varying symbol strings in the interaction of biological systems (in this case, human) with their (total) environments. (Compare William James's meaning of a language string as all the practical differences it makes, as expounded in *Pragmatism* [1907] and elsewhere.)

Language of all sorts is no less and no more than patterned energy. That energy is subject to Fourier decomposition at varying 'levels.' John Smith's work has shown, *vide supra*, some of the ways in which that can be done; W.A. Sedelow (1957) forecast others. Those Fourier techniques also would be applicable to the understanding of both the music and the pause patterns which are the subject of immediate discussion in the chapters which follow. Similarly, just as the pause patterns (e.g. rests, phrasing stops) in the written or published musical composition or in any of its performances may be studied for (the musically semantic freight carried by) their pauses, spoken versions of the text could be represented by musical notation without reference to the 'meaning' of what was spoken. Such an idea is not entirely "novum sub solem": Janos Jánáček and Robert Frost, composer and poet, were each interested – though informally and creatively – in such mappings back and forth between the encodings that are speech and those that are music. (See Jánáček 1955, and Thompson et al. 1966-76).

These papers differ in respect of the bounding of precision in their analytic domains; in the pausological analysis no upper bound is postulated, and the successful reconstitution of the data in its original form out of its notated representation would be aspiring to completeness, so that no information would be dropped (i.e., a version of the scientific test of reproducibility, or synthesis, by rule). By a kind of Turing Test, complete success would mean complete indistinguishability in the two forms, the original and its resynthesis, with reference to the dimensions in question. But as to the music, a close approximation is all that is aspired to – and that is, of course, all that even traditional musical notation has hoped to achieve. For music, within the limits set by notation, variation in what is not notated – as well as, of course, sometimes, with reference to some features of what is notated – provides the bases for qualitative discriminations.

Notes

1. A challenge to this distinction which is by far more consequential than even the impressive results of the 'fuzziness' research is the growing and great strength of work in the mathematical logic and model-theoretic tradition of Gottlob Frege (e.g., Geach – Black (eds.) 1952, esp. pp. 56–78 [Frege's "Über Sinn und Bedeutung," as "On sense and reference"]) and, then, Alonzo Church (e.g., Church 1940, 1951, 1956) (the Lambda Calculus), to date culminating in the 'Grammar' of Richard Montague (e.g., Dowty et al. 1981, and Dowty 1979; also, Bryan 1980, and Godden 1980). With this approach (wherein, in the manner of Montague, semantics and syntax are treated as isomorphic) we have the pregnant implication of the fact that both 'natural' language expressions and mathematical (e.g., programmed) language expressions are automatically transformable into a formal (and, thus, 'machineable') model with the same logical apparatus. Almost precisely a century ago Frege had, *mutatis mutandis*, in his functionality argument some view down this prospect, which by way of Church (the Lambda Calculus) and Montague and now Montague's intellectual heirs (such as Robert Bryan) is being clarified and effectuated – in part through the consequences of Montague's rejections of precisely the formulations of natural language expressions being either too rich or, *per contra*, too trivial for effective formal-logical transformation. Now, thusly, we are able to detect and act upon their essential comparability. And such a residual knotty problem as suitable 'framing' for metaphoric statement (as in the exemplary case of *Birch Bayh didn't get to first base*) may come to be by-passed or rendered by means of fuzzy topological structures (Isai and Kumimura). So, then, now we see an interesting and significant sort of convergence between the Zadehan and the Montaguean *traditios*. Consider, also, the implications of Benson 1979.
2. E.g., Erich Kahler 1970, and, especially, the translation of his "Die Verinnerlichung des Erzählens" by Richard and Clara Winston (Kahler 1973).
3. See W.A. Sedelow, Jr. 1982.
4. See Feyerabend 1978; also, Fish 1980; as well as Ortony (ed.) 1979; Brown 1978; and of course, Kuhn 1962 (and revised edition, 1970), noting, however, his 'recantations,' as in Kuhn 1978.
5. The elucidation of the associations, semantics, and entailments of the dubious concept "communication" probably can not be successfully undertaken without heavy 'theoretic' borrowings from the psychoanalytically-inspired Object-Relations literature, especially in the British tradition – inasmuch as the latent mythopoeic content of that concept is laden with unresolved 'Kleinian' issues, as to separation, and, then, a mythopoeic re-integration by means of the fantasy of communication.
6. Note the neo-Aristotelianism through a purposive lexicon in Searle 1975.
7. One facet of that third development is, then, the possible prospective elimination of many non-analog symbolic strings from various of the globe's cultures – by way of discovering that they lack algorithmic utility in facilitating stable relationships to environment, and also by way of discovering that they establish factitious and arbitrary partitions among the world's peoples through the differential generation and distribution of specious entities (e.g., hypostases; reifications).

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